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Investigation of surface layer of polished LiYF4 single crystal

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Abstract

Optical microscopy, measurements of microhardness, and electron backscattering have been used to investigate the surface of an LiYF4 single crystal. The depth of the deformed layer after mechanical polishing was found to be 30 μm. In layer-by-layer etching of the crystal, the best results were obtained using KOH at 60°. A surface with a structure close to that of the matrix was obtained by mechanical polishing combined with chemical and ion-beam etching.